

Claims:

1. A variable capacity modular combined refrigerating installation, which consists of multiple refrigerating modular units, each modular unit comprising one or more refrigerating cycles which includes a refrigerating compressor set (1), an evaporator (4) and a condenser(10), wherein:

A flow control valve of refrigerating medium is mounted at one of the refrigerating medium inlet/outlet ports of the evaporator (4), and a flow control valve of cooling medium is mounted at one of the inlet/outlet ports of the condenser (10), at least;

The refrigerating compressor set (1) includes a frequency conversion motor (1A) and a compressor with magnetic suspension bearings (1B).

2. A modular combined refrigerating installation according to claim 1, wherein:

A suction pressure sensor (26) is mounted at the suction port (17) of the compressor set to transfer the pressure information for controlling the working capacity of the compressor set (1); and/or a discharge pressure sensor (27) is mounted at the outlet port of the compressor to transfer the pressure information for controlling the opening ratio of said flow control valve (11) of cooling medium.

3. A modular combined refrigerating installation according to claim 1 or 2, wherein:

It comprises a refrigerating water temperature sensor (19) to collect and transfer the parameters of the refrigerating water temperature of the installation for controlling the opening ratio of said flow control valve (6) of refrigerating medium.

4. A modular combined refrigerating installation according to claim 1 or

2, wherein:

It comprises a sensor (20) for pressure difference between supply and return at the installation side and a sensor (21) for pressure difference between supply and return at the load side in the refrigerating medium system, to collect and transfer the parameters of the pressure difference between supply and return for calculating and controlling the working frequency of the delivery pump.

5. A modular combined refrigerating installation according to claim 1 or 2, wherein:

It comprises a sensor (22) for pressure difference between supply and return at the installation side in the cooling medium system to calculate and control the working frequency of the delivery pump.

6. A modular combined refrigerating installation according to claim 1 or 2, wherein:

A magnetic bearing sensor (28) is mounted at each magnetic bearing of the compressor (1B).

7. A modular combined refrigerating installation according to claim 1 or 2, wherein:

Said evaporator (4) is a plate heat exchanger of full liquid evaporation type, which is composed of an inner core (41) and an outer shell (42), said core (41) is formed by welding a certain number of metal plate of certain geometric shape according to a certain rule; said outer shell (42) is a barrel shaped container with a circle or square section; and in said evaporator (4), there are two or more kinds of medium flowing channels which are isolated from each other.

8. A modular combined refrigerating installation according to claim 7, wherein:

Each modular unit is provided with an economizer (14), and the liquid cryogen from said condenser (10) is divided into two parts, one part after being throttled super cools the other part, while said one part absorbs heat and evaporates itself.

9. A modular combined refrigerating installation according to claim 8, wherein:

A liquid level control throttling expansion device (8) is mounted between said condenser (10) and the plate heat exchanger of full liquid evaporation type (4).

10. A modular combined refrigerating installation according to claim 9, wherein:

A gas-liquid separator (2) is mounted between the suction port of the compressor (17) and the plate heat exchanger of full liquid evaporation type (4).

11. A modular combined refrigerating installation according to claim 1 or 2, wherein:

The general circuit of the modular refrigerating installation is controlled by a master controller (25), and the circuit of each modular unit is controlled by a microprocessor controller (18).